

CLAIMS

1. A method for setting total reverse link gain between a repeater and a base station, comprising:
 - determining an operating point for the repeater;
 - establishing a reverse communication link between the base station and a transceiver device within a coverage area of the repeater;
 - determining if an increase in a reverse link gain is substantially equal to an increase in a noise figure of the base station, based on a transmit power of the transceiver device; and
 - adjusting the reverse link gain by an amount based on the operating point and based on a difference in reverse link gain values, if the increase in the reverse link gain is substantially equal to the increase in the noise figure of the base station, to set the total reverse link gain.
2. The method of claim 1, wherein determining if the increase in the reverse link gain is substantially equal to the increase in the noise figure of the base station comprises:
 - summing a reverse link gain value and corresponding transmit power value of the receiver device to obtain a first sum value; and
 - increasing the reverse link gain value and re-summing the reverse link gain value and corresponding transmit power value to obtain a second sum value until a difference in the first and second sum values is obtained.
3. The method of claim 2, wherein adjusting the reverse link gain comprises:
 - adjusting the reverse link gain by an amount based on the operating point and the difference in the first and second sum values.
4. The method of claim 2, wherein adjusting the reverse link gain comprises:
 - adjusting the reverse link gain by an amount based on the operating point and a difference in two reverse link gain values.

5. The method of claim 1, wherein determining if the increase in the reverse link gain is substantially equal to the increase in the noise figure of the base station comprises:

- monitoring the transmit power of the transceiver device; and
- determining when the transmit power becomes substantially constant with an increase in the reverse link gain.

6. The method of claim 5, wherein adjusting the reverse link gain comprises:

- adjusting the reverse link gain by an amount based on the operating point and a difference in two reverse link gain values.

7. The method of claim 5, wherein adjusting the reverse link gain comprises:

- summing a reverse link gain value and corresponding transmit power value of the receiver device to obtain a first sum value;
- increasing the reverse link gain value and re-summing the reverse link gain value and corresponding transmit power value to obtain a second sum value; and
- adjusting the reverse link gain by an amount based on the operating point and the difference in the first and second sum values.

8. The method of claim 1, wherein determining if the increase in the reverse link gain is substantially equal to the increase in the noise figure of the base station comprises:

- monitoring the transmit adjust value received by the transceiver device; and
- determining when the transmit adjust value becomes substantially constant with an increase in the reverse link gain.

9. The method of claim 8, wherein adjusting the reverse link gain comprises:

- adjusting the reverse link gain by an amount based on the operating point and a difference in two reverse link gain values.

10. The method of claim 8, wherein adjusting the reverse link gain comprises:

- summing a reverse link gain value and corresponding transmit power value of the receiver device to obtain a first sum value;

increasing the reverse link gain value and re-summing the reverse link gain value and corresponding transmit power value to obtain a second sum value; and
adjusting the reverse link gain by an amount based on the operating point and the difference in the first and second sum values.

11. The method of claim 1, wherein establishing the reverse communication link comprises:

initiating the reverse communication link from one of either the transceiver device or the base station.

12. The method of claim 1, wherein establishing the reverse communication link comprises:

using a remote station circuitry within the coverage area to establish the reverse communication link.

13. The method of claim 1, wherein establishing the reverse communication link comprises:

embedding the transceiver device in the repeater.

14. The method of claim 1, wherein determining the operating point comprises:

determining an operating point based upon either one of link balancing or the amount of change in the noise floor of the base station.

15. The method of claim 1, wherein determining the operating point comprises:

obtaining a nominal noise value of the repeater;

obtaining a nominal noise value of the base station;

determining the ratio of a maximum output power of the base station and a maximum output power of the repeater; and

determining the operating point using the nominal noise value of the repeater, the nominal noise value of the base station and the ratio.

16. Apparatus for setting total reverse link gain between a repeater and a base station, comprising:

means for determining an operating point for the repeater;

means within a coverage area of the repeater for establishing a reverse communication link to the base station;

means for determining if an increase in a reverse link gain is substantially equal to an increase in a noise figure of the base station, based on a transmit power of the means for establishing the reverse communication link; and

means for adjusting the reverse link gain by an amount based on the operating point and based on a difference in reverse link gain values, if the increase in the reverse link gain is substantially equal to the increase in the noise figure of the base station, to set the total reverse link gain.

17. The apparatus of claim 16, wherein the means for determining if the increase in the reverse link gain is substantially equal to the increase in the noise figure of the base station comprises:

means for summing a reverse link gain value and corresponding transmit power value of the receiver device to obtain a first sum value; and

means for increasing the reverse link gain value and re-summing the reverse link gain value and corresponding transmit power value to obtain a second sum value until a difference in the first and second sum values is obtained.

18. The apparatus of claim 17, wherein the means for adjusting the reverse link gain adjusts the reverse link gain by an amount based on the operating point and the difference in the first and second sum values.

19. The apparatus of claim 17, wherein the means for adjusting the reverse link gain adjusts the reverse link gain by an amount based on the operating point and a difference in two reverse link gain values.

20. The apparatus of claim 16, wherein the means for determining if the increase in the reverse link gain is substantially equal to the increase in the noise figure of the base station comprises:

means for monitoring the transmit power of the transceiver device; and

means for determining when the transmit power becomes substantially constant with an increase in the reverse link gain.

21. The apparatus of claim 20, wherein the means for adjusting the reverse link gain adjusts the reverse link gain by an amount based on the operating point and a difference in two reverse link gain values.

22. The apparatus of claim 20, wherein the means for adjusting the reverse link gain comprises:

- means for summing a reverse link gain value and corresponding transmit power value of the receiver device to obtain a first sum value;

- means for increasing the reverse link gain value and re-summing the reverse link gain value and corresponding transmit power value to obtain a second sum value;
- and

- means for adjusting the reverse link gain by an amount based on the operating point and the difference in the first and second sum values.

23. The apparatus of claim 16, wherein the means for determining if the increase in the reverse link gain is substantially equal to the increase in the noise figure of the base station comprises:

- means for monitoring the transmit adjust value of the transceiver device; and

- means for determining when the transmit adjust value becomes substantially constant with an increase in the reverse link gain.

24. The apparatus of claim 23, wherein the means for adjusting the reverse link gain adjusts the reverse link gain by an amount based on the operating point and a difference in two reverse link gain values.

25. The apparatus of claim 23, wherein the means for adjusting the reverse link gain comprises:

- means for summing a reverse link gain value and corresponding transmit power value of the receiver device to obtain a first sum value;

- means for increasing the reverse link gain value and re-summing the reverse link gain value and corresponding transmit power value to obtain a second sum value;
- and

- means for adjusting the reverse link gain by an amount based on the operating point and the difference in the first and second sum values.

26. The apparatus of claim 16, wherein the means for establishing the reverse communication link is one of either a remote station circuitry or a transceiver device embedded in the repeater.

27. A machine readable medium for use in setting total reverse link gain between a repeater and a base station, comprising:

- a set of codes for determining an operating point for the repeater;
- a set of codes for establishing a reverse communication link between the base station and a transceiver device within a coverage area of the repeater;
- a set of codes for determining if an increase in a reverse link gain is substantially equal to an increase in a noise figure of the base station, based on a transmit power of the transceiver device; and
- a set of codes for adjusting the reverse link gain by an amount based on the operating point and based on a difference in reverse link gain values, if the increase in the reverse link gain is substantially equal to the increase in the noise figure of the base station, to set the total reverse link gain.

28. The medium of claim 27, wherein the set of codes for determining if the increase in the reverse link gain is substantially equal to the increase in the noise figure of the base station comprises:

- a set of codes for summing a reverse link gain value and corresponding transmit power value of the receiver device to obtain a first sum value; and
- a set of codes for increasing the reverse link gain value and re-summing the reverse link gain value and corresponding transmit power value to obtain a second sum value until a difference in the first and second sum values is obtained.

29. The medium of claim 28, wherein the set of codes for adjusting the reverse link gain comprises:

- a set of codes for adjusting the reverse link gain by an amount based on the operating point and the difference in the first and second sum values.

30. The medium of claim 28, wherein the set of codes for adjusting the reverse link gain comprises:

a set of codes for adjusting the reverse link gain by an amount based on the operating point and a difference in two reverse link gain values.

31. The medium of claim 27, wherein the set of codes for determining if the increase in the reverse link gain is substantially equal to the increase in the noise figure of the base station comprises:

- a set of codes for monitoring the transmit power of the transceiver device; and
- a set of codes for determining when the transmit power becomes substantially constant with an increase in the reverse link gain.

32. The medium of claim 31, wherein the set of codes for adjusting the reverse link gain comprises:

- a set of codes for adjusting the reverse link gain by an amount based on the operating point and a difference in two reverse link gain values.

33. The medium of claim 31, wherein the set of codes for adjusting the reverse link gain comprises:

- a set of codes for summing a reverse link gain value and corresponding transmit power value of the receiver device to obtain a first sum value;
- a set of codes for increasing the reverse link gain value and re-summing the reverse link gain value and corresponding transmit power value to obtain a second sum value; and
- a set of codes for adjusting the reverse link gain by an amount based on the operating point and the difference in the first and second sum values.

34. The medium of claim 27, wherein the set of codes for determining if the increase in the reverse link gain is substantially equal to the increase in the noise figure of the base station comprises:

- a set of codes for monitoring the transmit adjust value of the transceiver device; and
- a set of codes for determining when the transmit adjust value becomes substantially constant with an increase in the reverse link gain.

35. The medium of claim 34, wherein the set of codes for adjusting the reverse link gain comprises:

a set of codes for adjusting the reverse link gain by an amount based on the operating point and a difference in two reverse link gain values.

36. The medium of claim 34, wherein the set of codes for adjusting the reverse link gain comprises:

a set of codes for summing a reverse link gain value and corresponding transmit power value of the receiver device to obtain a first sum value;

a set of codes for increasing the reverse link gain value and re-summing the reverse link gain value and corresponding transmit power value to obtain a second sum value; and

a set of codes for adjusting the reverse link gain by an amount based on the operating point and the difference in the first and second sum values.

37. A machine readable medium for determining a desired total reverse link gain between a repeater and a base station, comprising:

a set of code segments to obtain a first value that represents a desired amount of change in the noise floor of the base station;

a set of code segments to obtain a second value that represents a measure of change in summing of reverse link gain values and corresponding mobile transmit power values; and

a set of code segments for determining the desired total reverse link using the first and second values.

38. A method for setting total reverse link gain between a repeater and a base station, comprising:

determining an operating point for the repeater;

establishing a reverse communication link between a transceiver device within a repeater coverage area to the base station;

repeatedly summing reverse link gain values and corresponding transmit power values of the transceiver device to obtain sum values; and

adjusting the reverse link gain by an amount based on the sum values and the operating point to set the total reverse link gain.

39. The method of claim 38, wherein the repeatedly summing comprises:
- summing a reverse link gain value and corresponding transmit power value of the receiver device to obtain a first sum value; and
 - increasing the reverse link gain value and re-summing the reverse link gain value and corresponding transmit power value to obtain a second sum value until a difference in the first and second sum values is obtained; and
 - wherein adjusting the reverse link gain comprises adjusting the reverse link gain by an amount based on the difference and the operating point.
40. Apparatus for setting total reverse link gain between a repeater and a base station, comprising:
- a processor configured to determine an operating point for the repeater;
 - a transceiver circuitry within a coverage area of the repeater coupled to the processor and configured to establish a reverse communication link to the base station; and
 - a summing unit coupled to the processor and configured to repeatedly sum reverse link gain values and corresponding transmit power values of the transceiver device to obtain sum values;
 - wherein the processor adjusts the reverse link gain by an amount based on the sum values and the operating point to set the total reverse link gain.